Railway Recruitment Boards
Junior Engineer

Solved Paper
26 August, 2015 (IIIrd Shift)

DIRECTIONS

1. This solved paper contains Q. Nos. 91-150 as leftover Questions (Q. Nos. 1-90) belonged to Technical Subject.
2. Each Question carries 1 mark.
3. 1/3 mark will deducted for wrong answer.

91. The HCF of two numbers is 15 and their LCM is 270. If one number is 45, the other number is
(a) 18   (b) 90   (c) 81   (d) 675

92. The largest number which divides 247 and 319, leaving remainders 7 and 4 respectively is
(a) 15   (b) 30   (c) 45   (d) 56

93. If $a:b = 5:6$ and $b:c = 3:4$, then $c:a$ is
(a) 4:5   (b) 5 : 4   (c) 8 : 5   (d) 5 : 8

94. If 8, 12, 14, x are in proportion, then x is equal to
(a) 18   (b) 20   (c) 21   (d) 28

95. Successive discounts of 40% and 20% are equivalent to a single discount of
(a) 60%   (b) 55%   (c) 54%   (d) 52%

96. The simple interest on rupees 800 for $\frac{5}{2}$ yr at 5% per annum is
(a) ₹ 100   (b) ₹125   (c) ₹ 150   (d) ₹ 200

97. The compound interest on rupees 12000 for 1 yr at 10% per annum compounded half yearly is
(a) ₹ 1200   (b) ₹ 1230
(c) ₹ 2520   (d) ₹ 2580

98. If CP of 25 articles is equal to SP of 20 articles, then in the whole transaction there is a profit of
(a) 10%   (b) 20%
(c) 25%   (d) 30%

99. To gain 25% after allowing a discount of 10%, the shopkeeper should mark the price of the article which costs him ₹720 as
(a) 1020   (b) 1200
(c) 1100   (d) 1000

100. A shopkeeper mixes 26kg of rice which costs him ₹ 100 per kg with 30kg of rice which costs him ₹ 180 per kg. He sells the mixed rice at ₹ 150 per kg. The percentage gain is
(a) 10%   (b) $\frac{100}{21}$ %
(c) 7%   (d) 5%

101. In two vessels A and B, the spirit and water are in the ratio of 5 : 2 and 7:6 respectively. The ratio in which these are mixed to obtain new mixture which contains spirit and water in the ratio 3 : 2 is
(a) 5:12   (b) 3 :2   (c) 7:13   (d) 35 :12

102. The speed of a boat in still water is 15 km/h. The speed of the stream is 3 km/h. The time taken to go 12 km downstream in minutes is
(a) 40   (b) 45   (c) 50   (d) 55

103. A train 200 m long is moving at 40 km/h. The time in seconds, it will take to pass another train 150 long which is moving at 50 km/h in the opposite direction from the moment they meet is
(a) 8   (b) 12   (c) 14   (d) 117

104. A can do a piece of work in 15 days and B can do the same work in 10 days. If they work together, number of days required to complete the same work is
(a) 5   (b) 6
(c) 7   (d) 8

105. P and Q can do a piece of work in 10 days, Q and R in 12 days and R and P in 15 days. In how many days P alone can do the same work?
(a) 24   (b) 40   (c) 6   (d) $\frac{40}{3}$

106. The average of first six even whole numbers is
(a) 5   (b) 6   (c) 7   (d) 8

107. The average marks of students of section A and B are respectively 60 and 70. The number of students in section A is 47 and in section B is 53. The average marks of both sections taken together are
(a) 65.5   (b) 65.3
(c) 65.6   (d) 65.8

108. The first term of an AP is -5 and third term is 17. Its seventh term is
(a) 31   (b) 41
(c) 61   (d) 71

109. The 12th term of the GP $1, -3, 9, -27, ...,$ is
(a) 3^{12} (b) -3^{12}
(c) 3^{11} (d) -3^{11}

110. A ladder just reaches the top of a wall. The foot of the ladder is 8m away from the foot of the wall. The ladder makes an angle of 60° with the ground. The length of the ladder is
(a) 4m   (b) 16m
(c) $\dfrac{16\sqrt{3}}{3}$ m   (d) $16\sqrt{3}$ m

111. From a point on the bridge across a river the angle of depressions of the bank on the opposite side of the river are 60° and 45° respectively. If the bridge is at a height of 3 m from the bank, the width of the river is
(a) $2(\sqrt{3}+1)$ m   (b) $3(\sqrt{3}+1)$ m
(c) $3 - \sqrt{3}$ m   (d) $3 + \sqrt{3}$ m

112. If $(x-1)$ is a factor of $3x^3 - 2ax^2 - 3x + 6$, then a is equal to
(a) 3   (b) -3
(c) $+6$ (d) -6

113. One of the factors of $(81x^2 - 1) + (1 + 9x)^2$ is
(a) $18x$ (b) $9 + x$
(c) $9 - x$ (d) $9x - 1$

114. All values of k for which $x^2 - kx + 9 = 0$ has real roots is
(a) $-6 \le k \le 6$ (b) $6 \le k \le -6$
(c) $k \ge 6$ (d) $k \le -6$

115. The sum and product of the roots of the equation $x^2 - 8x + 4 = 0$ are respectively
(a) $-8, 4$ (b) $8, -4$
(c) $8, 4$ (d) $-8, -4$

116. The football player has to leave the field if the referee shows him
(a) green card once
(b) yellow card once
(c) green card twice
(d) yellow card twice or Red card once

117. The first Indian to win an Olympic gold medal in an individual capacity was
(a) Abhinav Bindra
(b) Milkha Singh
(c) PT Usha
(d) Vijender Kumar

118. When you touch a hot plate and immediately withdraw your hand, the action in triggered by your
(a) brain
(b) spinal cord
(c) upper arm muscles
(d) bones of the hand

119. In a green house, paraffin is ignited to enhance photosynthesis in the plants as it provides.
(a) Water   (b) Carbon dioxide
(c) Oxygen   (d) More light

120. Which of the following is not an insect?
(a) Spider   (b) Butterfly
(c) Beetle   (d) Termite

121. You can make soap at home from vegetable oil and
(a) caustic potash
(b) ammonium hydroxide
(c) caustic soda
(d) sodium chloride

122. Students were asked to present a "balanced equation" regarding Photosynthesis. Which is the correct equation?
(a) $6CO_2 + H_2O \longrightarrow C_6H_{12}O_6 + O_2$
(b) $6CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6 + 6O_2$
(c) $CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6 + O_2$
(d) $CO_2 + H_2O \longrightarrow C_6H_{12}O_6 + O_2$

123. Which out of the F, Br, Ca and Mg which are important elements because their salts are useful to humans may be grouped as halogens?
(a) F and Br   (b) F and Ca
(c) Br and Mg   (d) Ca and Br

124. A maximum of how many partners can a trading business firm have according to Indian Partnership Act?
(a) 20   (b) 15
(c) 10   (d) 5

125. We are able to walk on the ground because of
(a) Friction
(b) Gravitation
(c) Rotation
(d) Combination of gravity, Rotation

126. Scissors belong to the category of simple machines called levers. It is a first class lever because
(a) fulcrum (fixed point) is between load and effort
(b) load is between fulcrum and effort
(c) effort is between fulcrum and load
(d) it does not have a fulcrum

127. As I was folding my blanket of synthetic fibers, there were sparks due to generation of
(a) frictional electricity
(b) current electricity
(c) flow of election field
(d) flow of potential

128. The latest country to give up its national currency and adopt 'Euro' as its currency is
(a) Latvia   (b) Lebanon
(c) Brazil   (d) Italy

129. Who presides over the present Lok Sabha when Parliament Session is on?
(a) President, Pranab Mukherjee
(b) Vice President, Hamid Ansari
(c) Prime Minister, Narendra Modi
(d) Speaker, Sumitra Mahajan

130. BCMI project connects Bangladesh, China and India with
(a) Manila   (b) Myanmar
(c) Malaysia   (d) Morocco

131. One long river of our country which flows through the North-East is
(a) Ganges   (b) Brahmaputra
(c) Narmada   (d) Kaveri

132. The making of 'maps' is called
(a) Calligraphy   (b) Numismatics
(c) Cartography   (d) Philately

133. What is global warming and climate change due to?
(a) Accumulation of Carbon dioxide in the atmosphere
(b) Ozone hole
(c) Photo Chemical smog
(d) UV rays of sunlight falling on earth

134. The Indian Constitution was written on 26/11/1949 and came into force on
(a) Same day   (b) 26.01.1950
(c) 15.08.1950   (d) 26.01.1952

135. A few children between ages 8 and 14 were rescued from a factory where they worked under inhuman conditions. Which Fundamental Right of the Constitution made this possible?
(a) Right to Education
(b) Right to Freedom of Speech
(c) Right Against Exploitation
(d) Right to Freedom of Religion

136. The relationship between quantity, revenue and price is
(a) Quantity Times Price = Revenue
(b) Revenue Times Price = Quantity
(c) Quantity Times Revenue = Price
(d) Price Times Quantity = Current Price

137. Pablo Picasso's creation 'Guernica' was based on consequences of
(a) Spanish Civil War
(b) Sudanese Civil War
(c) Second World War
(d) American War of Independence

138. Three national leaders were together called Lal Bal Pal. Which name in the options is wrong?
(a) Bal Gangadhar Tilak
(b) Bipin Chandra Pal
(c) Lala Lajpat Rai
(d) Lal Bahadur Shastri

139. Who was the last Governor-General in the two century rule of the British in India?
(a) Lord Clive
(b) Sir Warren Hastings
(c) Lord Mountbatten
(d) Lord Cornwallis

140. Which of the following statements is not true?
(a) Amartya Sen is the only economist from India/of Indian origin to have won the Nobel Prize for Economics
(b) Amartya Sen is also credited with developing the input output method with CV Raman

(c) Amartya Sen received the Nobel Prize in 1998 for his contribution to welfare economics
(d) Amartya Sen is also known as a champion of nationalism, secularism

141. Pointing to a photograph Rohit said, "His father's brother is my brother's father." How is Rohit related to the man in the photograph?
(a) Cousin
(b) Uncle
(c) Brother–in–law
(d) Brother

142. The first two numbers on the left of the sign '::' are related in a certain way. The same relationship holds for the second pair of numbers on the right side of the sign '::' of which one is missing. Find the missing one from the alternatives.
16 : 27 :: 36 : ?
(a) 140
(b) 125
(c) 112
(d) 84

143. The two words on the left side of the sign '::' are related in a certain way. The same relationship holds for the second pair of words on the right side of the sign '::' of which one is missing. Find the missing one from the alternatives.
Microphone : Loud :: Microscope : ?
(a) Bacteria
(b) Reflect
(c) Examine
(d) Magnify

144. Six friends A, B, C, D, E and F are sitting in a row. A is not sitting next to C or D. There are two persons between D and F. D is next to B, who is in one of the extremes. Who is sitting in the other extreme?
(a) A
(b) C
(c) E
(d) F

145. Arrange the following words in a meaningful logical sequence and choose the appropriate number sequence from the alternatives.
1. Medicine 2. Injury 3. Doctor
4. Accident 5. Cure 6. Hospital

(a) 4, 2, 3,6, 1, 5
(b) 5, 6, 3, 1, 2, 4
(c) 4, 2, 6, 1, 3, 5
(d) 4, 2, 6, 3, 1, 5

146. The numbers in each group are related in a certain way. Choose the correct number from among the alternatives that will replace the question mark.
(3 [34] 5) (4 [65] 7) (6 [?] 9)
(a) 85
(b) 107
(c) 117
(d) 128

147. In a certain language, '296' means 'adults are educated'; '7825' means 'rich persons are nice'; and '9257' means 'educated persons are rich'. Which digit means 'educated' in that language?
(a) 9
(b) 6
(c) 8
(d) 7

148. If 'METHOD' is coded as 'LFRJLG', then 'GROUND' will be coded as:
(a) FSMWLG
(b) FSMWKG
(c) ESMWKG
(d) FSNWKG

149. Harsh's school bus picks him up from his home. Then, it takes one left turn and two right turns to reach his school. If the bus is facing North–West when it reaches the school, which direction was the bus facing at Harsh's home.
(a) South-West
(b) South-East
(c) North-East
(d) South

150. The numbers in the matrix given below follow a certain trend row–wise and/or column wise. Study the trend and choose the number which will replace the question mark?

9	11	21
24	29	?
6	7	14

(a) 43
(b) 53
(c) 56
(d) 67

<div style="text-align:center">**Answers**</div>

91 *(b)*	92 *(a)*	93 *(c)*	94 *(c)*	95 *(d)*	96 *(a)*	97 *(b)*	98 *(c)*	99 *(d)*	100 *(d)*
101 *(c)*	102 *(a)*	103 *(c)*	104 *(b)*	105 *(a)*	106 *(a)*	107 *(b)*	108 *(c)*	109 *(d)*	110 *(b)*
111 *(d)*	112 *(a)*	113 *(a)*	114 *(b)*	115 *(c)*	116 *(d)*	117 *(a)*	118 *(b)*	119 *(a)*	120 *(a)*
121 *(c)*	122 *(b)*	123 *(a)*	124 *(a)*	125 *(a)*	126 *(a)*	127 *(a)*	128 *(a)*	129 *(d)*	130 *(b)*
131 *(b)*	132 *(c)*	133 *(a)*	134 *(b)*	135 *(c)*	136 *(a)*	137 *(a)*	138 *(d)*	139 *(c)*	140 *(b)*
141 *(a)*	142 *(b)*	143 *(d)*	144 *(b)*	145 *(a)*	146 *(c)*	147 *(a)*	148 *(b)*	149 *(a)*	150 *(c)*

Hints & Solutions

91. (b) Here, HCF = 15, LCM = 270 and one number = 45

∴ Second number

$$= \frac{HCF \times LCM}{One\ number} = \frac{15 \times 270}{45} = 90$$

92. (a) Required number

= HCF of $(247 - 7)$ and $(319 - 4)$

= HCF of 240 and 315

Here, $240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5$

and $315 = 3 \times 3 \times 5 \times 7$

∴ HCF of 240 and 315 = $3 \times 5 = 15$

∴ Required number = 15

93. (c) Here, $\frac{a}{b} = \frac{5}{6}$ and $\frac{b}{c} = \frac{3}{4}$

∴ $\frac{a}{b} \times \frac{b}{c} = \frac{5}{6} \times \frac{3}{4} \Rightarrow \frac{a}{c} = \frac{5}{8} \Rightarrow \frac{c}{a} = \frac{8}{5}$

$\Rightarrow c : a = 8 : 5$

94. (c) According to the question, 8, 12, 14, x are inproportion

∴ $\frac{8}{12} = \frac{14}{x}$

$\Rightarrow x = \frac{14 \times 12}{8} = 21$

95. (d) Single discount are equivalent to sucessive discounts of 40% and 20%

$= 100 - 100 \times \frac{100 - 40}{100} \times \frac{100 - 20}{100}$

$= 100 - 48 = 52\%$

96. (a) Here, $P = ₹\ 800, T = \frac{5}{2}$ yr,

$R = 5\%$ per annum

∴ SI $= \frac{PRT}{100} = \frac{800 \times 5 \times \frac{5}{2}}{100} = ₹\ 100$

97. (b) Here, $P = ₹\ 12000, n = 1$ yr, $r = 10\%$ per annum

∵ Interest due to half yearly

∴ $n = 1 \times 2 = 2, r = \frac{10}{2} = 5\%$

∴ CI $= P\left[\left(1 + \frac{r}{100}\right)^n - 1\right]$

$= 12000\left[\left(1 + \frac{5}{100}\right)^2 - 1\right]$

$= 12000\left[\frac{441}{400} - 1\right]$

$= 12000 \times \frac{41}{400} = ₹\ 1230$

98. (c) Let CP of one article = $₹\ x$

According to the question, CP of 25 articles

= SP of 20 articles

∴ SP of one article $= \frac{25}{20}x$

∴ Profit per cent $= \frac{SP - CP}{CP} \times 100\%$

$= \frac{\frac{25}{20}x - x}{x} \times 100\%$

$= \frac{5}{20} \times 100\% = 25\%$

99. (d) Let mark price is $₹\ x$

∴ SP $= MP \times \frac{100 - discount\ \%}{100}$

$= x \times \frac{100 - 10}{100} = \frac{9x}{10}$

Here, CP $= ₹\ 720$, gain = 25%

∴ SP $= CP \times \frac{100 + gain\%}{100}$

$\Rightarrow \frac{9x}{10} = 720 \times \frac{100 + 25}{100}$

$\Rightarrow x = \frac{720 \times 125 \times 10}{9 \times 100} = ₹\ 1000$

100. (d) Total CP $= 26 \times 100 + 30 \times 180$

$= 2600 + 5400 = ₹\ 8000$

SP $= (26 + 30) \times 150 = ₹\ 8400$

∴ Gain Percentage

$= \frac{SP - CP}{CP} \times 100$

$= \frac{8400 - 8000}{8000} \times 100$

$= \frac{400}{8000} \times 100 = 5\%$

101. (c) Let x and y quantities mixed of vessels A and B respectively.

∴ Spirit in $A = \frac{5}{5+2} \times x = \frac{5}{7}x$

Water in $A = \frac{2}{5+2} \times x = \frac{2}{7}x$

and Spirit in $B = \frac{7}{7+6} \times y = \frac{7}{13}y$

Water in $B = \frac{6}{7+6} \times y = \frac{6}{13}y$

According to the question,

$\frac{Spirit\ in\ A\ and\ B}{Water\ in\ A\ and\ B} = \frac{3}{2}$

$\Rightarrow \frac{\frac{5}{7}x + \frac{7}{13}y}{\frac{2}{7}x + \frac{6}{13}y} = \frac{3}{2}$

$\Rightarrow \frac{65x + 49y}{26x + 42y} = \frac{3}{2}$

$\Rightarrow 130x + 98y = 78x + 126y$

$\Rightarrow 52x = 28y$

$\Rightarrow \frac{x}{y} = \frac{28}{52} \Rightarrow \frac{x}{y} = \frac{7}{13}$

$\Rightarrow x : y = 7 : 13$

102. (a) Speed of a boat in still water

$u = 15$ km/h

Speed of the stream $v = 3$ km/h

Relative speed of a boat in downstream

$= (u + v) = 15 + 3 = 18$ km/ h

∴ Required time $= \frac{Distance}{Speed} = \frac{12}{18}$ h

$= \frac{12}{18} \times 60$ min $= 40$ min

103. (c) Relative speed

$= 40 + 50 = 90$ km/h

$= 90 \times \frac{5}{18}$ m/s $= 25$ m/s

Cover distance cross the train

$= 200 + 150 = 350$ m

∴ Required time $= \frac{Distance}{Time} = \frac{350}{25}$ s $= 14$ s

104. (b) 1 day's work of $A = \frac{1}{15}$

1 day's work of $B = \frac{1}{10}$

∴ 1 day's work of A and

$B = \frac{1}{15} + \frac{1}{10} = \frac{2 + 3}{30} = \frac{1}{6}$

∴ A and B complete the work $= \frac{1}{\frac{1}{6}} = 6$ days

105. (a) 1 day's work of P and $Q = \frac{1}{10}$

1 day's work of Q and $R = \frac{1}{12}$

1 day's work of R and $P = \frac{1}{15}$

∴ 1 day's work of P, Q and R

$= \frac{1}{2}\left[\frac{1}{10} + \frac{1}{12} + \frac{1}{15}\right]$

$= \frac{1}{2} \times \frac{6 + 5 + 4}{60} = \frac{1}{8}$

∴ 1 day's work of P alone

$= \frac{1}{8} - \frac{1}{12} = \frac{3 - 2}{24} = \frac{1}{24}$

∴ P alone can do this work $= \frac{1}{\frac{1}{24}} = 24$ days

106. (a) First six even whole numbers 0, 2, 4, 6, 8, 10

∴ Average of first six even whole number

$= \frac{0 + 2 + 4 + 6 + 8 + 10}{6} = \frac{30}{6} = 5$

107. (b) Average of both sections

$= \frac{Total\ mark\ of\ both\ sections}{Total\ number\ of\ students\ both\ sections}$

$= \frac{60 \times 47 + 70 \times 53}{47 + 53} = \frac{2820 + 3710}{100}$

$= \frac{6530}{100} = 65.3$

108. (c) Here, $a = -5, T_3 = 17$

Let common difference is d

$\therefore \qquad T_n = a + (n-1)d$

$\Rightarrow \qquad T_3 = 17 = -5 + (3-1)d$

$\Rightarrow \qquad 22 = 2d \Rightarrow d = 11$

Now, $T_7 = -5 + (7-1) \times 11 = -5 + 66 = 61$

109. (d) GP $1, -3, -9, -27 \ldots$

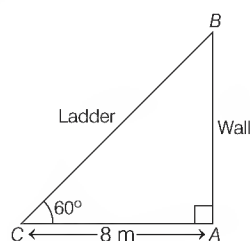Here, $a = 1, r = \dfrac{-3}{1} = -3, n = 12$

$\because \quad T_n = ar^{n-1}$

$T_{12} = (1)(-3)^{12-1} = (-3)^{11} = -3^{11}$

110. (b) Let AB is wall and BC is laddder which length x

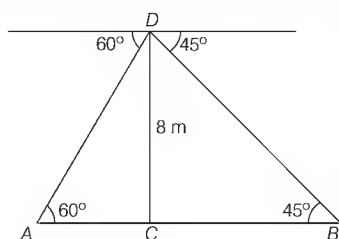$\therefore BC = x$ and $AC = 8$

In $\triangle ACB$,

$\cos 60° = \dfrac{AC}{BC}$

$\Rightarrow \qquad \dfrac{1}{2} = \dfrac{8}{x}$

$\Rightarrow \qquad x = 16 \text{ m}$

111. (d) Let A and B are the points on the banks of river and D is the point on brige.

In $\triangle ACD$, $\tan 60° = \dfrac{CD}{AC}$

$\Rightarrow \qquad \sqrt{3} = \dfrac{3}{AC}$

$\Rightarrow \qquad AC = \dfrac{3}{\sqrt{3}} = \sqrt{3} \text{ m}$

In$\triangle BCD$, $\tan 45° = \dfrac{CD}{BC}$

$\Rightarrow \qquad 1 = \dfrac{3}{BC}$

$\Rightarrow \qquad BC = 3 \text{ m}$

$\therefore$ Width of river $= AC + BC = (\sqrt{3} + 3) \text{ m}$

112. (a) Let $P(x) = 3x^3 - 2ax^2 - 3x + 6$

$\because x - 1$ is a factor of $P(x)$

$\qquad x - 1 = 0 \Rightarrow x = 1$

$\therefore \qquad P(1) = 0$

$\Rightarrow 3(1)^3 - 2a(1)^2 - 3(1) + 6 = 0$

$\Rightarrow \qquad 3 - 2a - 3 + 6 = 0$

$\Rightarrow \qquad 2a = 6 \Rightarrow a = 3$

113. (a) $(81x^2 - 1) + (1 + 9x)^2$

$\qquad = 81x^2 - 1 + 1 + 81x^2 + 18x$

$\qquad = 162x^2 + 18x = 18x(9x + 1)$

$\therefore 18x$ is factor of given polynomial

114. (b) Given equation, $x^2 - Kx + 9 = 0$

Comparing the given Eq. from

$\qquad ax^2 + bx + c = 0$

$\qquad a = 1, b = -K, c = 9$

$\because$ roots are real

$\therefore \qquad b^2 - 4ac \geq 0$

$\Rightarrow (-K)^2 - 4 \times 1 \times 9 \geq 0$

$\Rightarrow \qquad K^2 \geq 36$

$\Rightarrow \qquad 6 \leq K \leq -6$

115. (c) Given equation, $x^2 - 8x + 4 = 0$

Sum of the roots $= \dfrac{-\text{coeff. of } x}{\text{coeff. of } x^2} = \dfrac{-(-8)}{1} = 8$

Product of roots $= \dfrac{\text{constant term}}{\text{coeff. of } x^2} = \dfrac{4}{1} = 4$

116. (d) The colour of the cards indicates the type of offence and the level of punishment. The football player has to leave the field if the refree shows him yellow and red cards.

117. (a) Abhinav Bindra became the first Indian to win an individual gold medal at the olympic Games, after he won gold (at 2008 Beijing Olympics) in the Men's 10 metre air rifle event.

118. (b) When we touch a hot plate we immediately withdraw hand because of reflex action. It begins from our spinal cord. This is called reflex action.
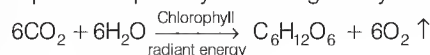
119. (b) Burning paraffin in glass house produce carbon dioxide (CO_2) which is used by green plants as a source of CO_2 for photosynthesis in glass house.

120. (a) Spider is an arthropod but is not an insect. It has 4 pairs of legs instead of three. Butterfly, Beetle and Termite are insects with three pairs of legs.
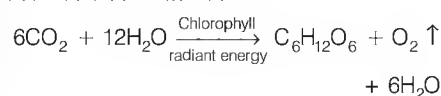
121. (c) When fats are heated with aqueous, caustic soda (sodium hydroxide) solution. The soap are formed

Fats/vegetable oil + caustic soda → (Sodium Hydroxide)

Soap + Glycerol (By-product).

122. (b) The correct balanced chemical equation for photosynthesis is given by

$6CO_2 + 6H_2O \xrightarrow[\text{radiant energy}]{\text{Chlorophyll}} C_6H_{12}O_6 + 6O_2 \uparrow$

It can be also written as

$6CO_2 + 12H_2O \xrightarrow[\text{radiant energy}]{\text{Chlorophyll}} C_6H_{12}O_6 + O_2 \uparrow$

$\qquad\qquad\qquad\qquad\qquad + 6H_2O$

123. (a) F (Fluorine) and Br (Bromine) are the first and third member respectively of halogen family. The elements of halogen groups are F (Fluorine), Cl (Chlorine), Br (Bromine), I (Iodine) and At (Astatine).

124. (a) As per the Indian Partnership Act, the number of partners in a trading business firm shall not exceed 20.

125. (a) We are able to walk on the ground because of friction, walking will not be possible without friction if there is no friction, then our foot pressing the ground for walking will slip.

126. (a) Scissors is a first class lever machine. The fulcrum is the point where the scissors blades are joined together fulcrum is between load and effort of the scissors.

127. (a) When you rub your fingertips along a blanket you are exchanging charged particles like electrons. This is due to frictional electricity.

128. (a) Lithuania has become the 19th European country to adopt the Euro. This former Soviet Republic is the last of this Baltic nations to adopt the Euro after Estonia (2011) and Latvia (2014)

129. (d) In parliamentary form of government, the speaker is the presiding officer of Lok Sabha, who presides over its meetings and session. The current speaker of Lok Sabha is Sumitra Mahajan.

130. (b) The Bangladesh-China-Indian-Myanmar Forum for Regional Cooperation is a sub-regional organisation of Asian nations, which aimed at greater integration of trade and investment between the four countries.

131. (b) The Brahmaputra river originates from Chemayungdung Glacier (Kailash range) in Tibet. It is known as TSANG-PO. It important tributaries are Lohit, Teosta, Dihang Subansin and Manas.

132. (c) Cartography is the study and practice of making maps Calligraphy is an art of writing.

133. (a) The global warming and climate change is due to accumulation of carbon dioxide in the atmosphere. It is due to the green house effect in which part of solar radiation is absorbed by CO_2 gas present in atmosphere.

134. (b) Indian constitution was adopted by Constituent Assembly of India on 26 November 1949 and became effective on 26 January 1950. Currently, the constitution has 448 articles, 25 parts and 12 schedules. It is the lengthiest written constitution of the world. (originally, it had 395 articles)

135. (c) There are six Fundamental Rights. Articles 23 and 24 forms the part of Right against Exploitation. Article 24 states that no child below the age of 14 years shall be employed to work in any factory or mine or engaged in any other hazardous employment.

136. (a) Revenue is simply the amount of money a firm receives. If a firms is selling one product at a homogenous price Quantity Times Price = Revenue.
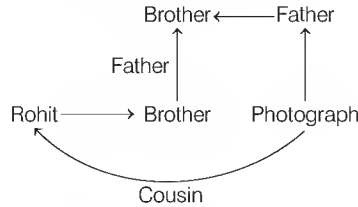
137. (a) Picasso's most famous work, Guernica is his most powerful statement. It was painted as an immediate reaction to the Nazi's devastating bombing of Basque town of Guernica during Spanish Civil war.

138. (d) Lal Bal Pal were a triumvirates of assertive nationalists in British ruled India from 1905 to 1918. They adopted extremist policies to fought against the British rule. They advocated Swadeshi and Boycott Movement as part of anti-partition struggle (portion of Bengal) during 1905.
According to the question Lal Bahadur Shastri name in the options is wrong.

139. (c) Lord Mountbatten (1947-48) was the last Governor-General of the British India. He introduced the Indian Independence Bill.

140. (b) Amartya Sen has never developed any input output method with CV Raman. Sir C.V. Raman was an Indian physicist who received the Nobel Prize for an important optics.

141. (a) According to the question,

$$\text{Brother} \longleftarrow \text{Father}$$
$$\text{Father} \qquad \qquad \uparrow$$
$$\text{Rohit} \longrightarrow \text{Brother} \qquad \text{Photograph}$$
$$\smile$$
$$\text{Cousin}$$

142. (b)
$$16 \; : \; 27 \; :: \; 36 \; : \; 125$$
$$\downarrow \qquad \downarrow \qquad \downarrow \qquad \downarrow$$
$$(4)^2 \; (4-1=3)^3 \; (6)^2 \; (6-1=5)^3$$

143. (d) As, microphone used to loud the music similarly, microscope used to magnify smaller things.

144. (b) According to the question,

$$\vert \quad \vert \quad \vert \quad \vert \quad \vert \quad \vert$$
$$B \quad D \quad E \quad A \quad F \quad C$$

Hence, C sits at other extreme end.

145. (a) Logical sequence of words.
Accident → Injury → Doctor → Hospital
(4)   (2)   (3)   (6)
                       → Medicine → cure
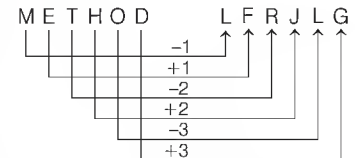   (1)   (5)

146. (c) As, $3 \times 5 = 15 \times 2 + (5-3)^2$
$$= 30 + 4 = 34$$
and, $4 \times 7 = 28 \times 2 + (7-4)^2$
$$= 56 + 9$$
$$= 65$$
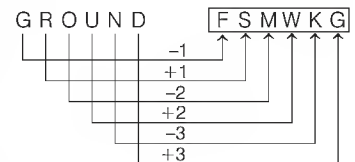Similarly, $6 \times 9 = 54 \times 2 + (9-6)^2$
$$= 108 + 9$$
$$= 117$$

147. (a)

②⑨6 ⟶ adults (are) educated

7⑧② 5 ⟶ rich persons (are) /nice\

⑨②5 7 ⟶ educated (persons) are rich

148. (b) As,

M E T H O D   L F R J L G
-1
+1
-2
+2
-3
+3

Similarly,

G R O U N D   F S M W K G
-1
+1
-2
+2
-3
+3

149. (a)

Last position   North
(North-West)   N-E
West ←   → East
Initial position
(South-west)   South
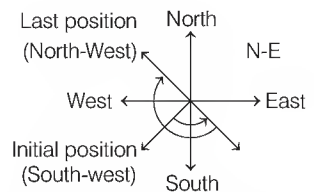
Hence, bus facing South-West direction at Harsh's home.

150. (c) In first row, $2 \times 9 + 6 = 18 + 6 = 24$
In second row, $2 \times 11 + 7 = 22 + 7 = 29$
In third row, $2 \times 21 + 14 = 42 + 14 = 56$